Security in Infrastructures

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Edited by

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To people working for Security

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PREFACE

The scientific study of conflict and violence is not a new endeavor. The *Coloquios Internacionales sobre Cerebro y Agresión* (CICA) started, almost forty years ago, in the early eighties of the last century, gathering scholars and researchers interested in this topic from quite interdisciplinary origins: individual and social psychology, psychiatry, physiology, sociology, anthropology, animal behavior, criminology, international law, political science, pharmacology, child development, education, security studies and international relations, law and world affairs, military and peace studies, as well as policy makers. The main characteristic of these CICA meetings throughout the world is precisely this comprehensive approach.

The scientific fruit of the forty CICAs held to date in sixteen countries in five continents (Spain, Chile, Colombia, South Africa, Sri Lanka, USA [California, New England, and Georgia], Greece, Zambia, Italy, England, Nord Ireland, Mexico, Poland, Turkey, Hungary, and Bulgaria), is reflected in the elaboration of 27 publications. Most of them are in the English language.

The serious consequences of September 11, 2001, revitalized research on an extreme form of violence: terrorism. In 2006, the Society for Terrorism Research (STR) was formed from the recognition of the need for a focused nonpartisan interdisciplinary organization that could promote the study of terrorism and disseminate information across disciplines throughout the world. The same year, the representatives of CICA and STR met at Harvard for joining forces to deepen the understanding of the complexity of factors involved with aggression and terrorism. Starting the following year, seven annual CICA-STR International Conferences were organized in a row. The same publisher of the present book, Cambridge Scholars Publishing, has published many of their scientifically selected contributions presented at these CICA-STR Conferences in three volumes[1].

[1] Daniel Antonius, Adam D. Brown, Tali K. Walters, J. Martin Ramirez, Samuel Justin Sinclair (eds). *Interdisciplinary Analyses of Terrorism* (2010); Tali K. Walters, Rachel Monaghan, J. Martin Ramirez, (eds). *Radicalization, Terrorism, and Conflict* (2013); and J. Martín Ramírez, C. Morrison & A.J. Kendall (eds). *Conflict, Violence, Terrorism, and their Prevention* (2014).

Peace and conflict studies have also grown in stature as scholarly subjects in recent years. The academic environment has witnessed a conceptual expansion, broadening out from issues of traditional security and military strategy to include conflict transformation, human security, peacebuilding and governance. There is now much greater awareness that peace and conflict depend on a vast range of factors, *inter alia* inequality, human rights, arms control, international norms and psychological and mobilization processes.

Particularly since the end of the Cold War, standards of what constitutes 'peace' have moved towards becoming universal. Conflict, far from being glorious, honourable or one route to victory, is increasingly reviled and despised. Constructive conflict management, therefore, consists not only ineffective post-war rebuilding but also particularly in preventing conflict occurring and in limiting its impact. Research in these fields has the practical aim of seeking to reduce the severity, frequency and duration of all types of conflict.

In a year marked by both hopeful trends and alarming challenges, the CICA's mission to provide thoughtful, policy-relevant research and insights for a more secure, peaceful world, has never been more timely. An expression of this scientific concern is the organization in Madrid of its XL International Conference, mainly focused at *Security and Defence: Risks and Threats in the Protection of Critical Infrastructures (PIC)*, with the participation of 80-odd scholars and professionals coming from fourteen countries of four continents.

The PIC topic is one of the twelve main threats mentioned by the Spanish government within the frame of its current strategy of security and defence (*Estrategia de Seguridad Nacional y la Directiva de Defensa Nacional*, May 2013): armed conflicts, terrorism, cyberthreats, organized crime, economic instability, energy vulnerability, flow of irregular migrants; weapons of mass destruction (WMD), espionage, natural emergencies and disasters, vulnerability of the marítime space, and threats to the critical infrastructures and essential services. Their collapse would generate an alert situation all over the country. This explains the importance of minimizing to the *maximum* their risks: the prevention of these kind of threats has become one of the priorities in the framework of the security of any country.

Within this context, the XL CICA provided interesting information about the planning system of PIC in Spain (by the Director of the Spanish *Centro Nacional para la Protección de Infraestructuras Críticas* [CEPIC]), and its situation in North America (by the Home attachée at the Spanish embassies in USA and Canada). The Chief Commander of the

Spanish Cyberdefence (*Mando Conjunto de Ciberdefensa*) offered a military approach; the Ambassador of the Kingdom of Spain for Cybersecurity informed on the international cooperation existent in the topic of PIC; a French diplomat working at the *Geneva Centre for Security Policy* (GCSP) analyzed the eventual dissuasive effect of nuclear weapons on it; a former officer of the Canadian Forces (CF) praised the building of an engagement between civil and military societies in a joint effort to challenge the risks and threats to the needed global security; and finally, among other keynote speakers, the main person responsible for the refugee camps at the Thai Home ministry explained their successful way of dealing with the flow of migrants in his country.

This present volume on *SECURITY IN INFRASTRUCTURES* brings together a collection of scholarly works, authored by thirteen international researchers and leading thinkers representing eight countries, from Europe, Africa, America and the Middle East, addressing contemporary, history-making issues in human and international security from an interdisciplinary perspective. Contributors transmit relevant findings, theory, and policy ideas for scholars of security and international relations, law and world affairs, military and peace studies, as well as for policymakers, and to the general public who are interested in keeping up with this global area of concern. It provides a jumping-off point for conversation and collaboration that can lead to new knowledge and broader understanding.

As an interdisciplinary collection of manuscripts, this book integrates and synthesizes theory, research, and public policy analysis to solve the complex questions and problems presented by this topic. Recognition of the need to approach the problem of the PIC from an interdisciplinary perspective is gaining strength within academic settings, policy institutes, and global conferences focused on security issues. But, unlike most recent edited books on the subject that are on the market at this time, *Security in Infrastructures* provides an *interdisciplinary* approach to understanding related current issues: the background formation of its contributors are militia and police, law, diplomacy, aggression and conflict studies, and psychology. This approach encourages a broader perspective and thought process, trans-discipline and global collaboration and cooperation, and an integrated synthesis of knowledge.

This eclectic cast of authors approaches the main topic from four different points of view.

The first section opens with two chapters offering some interesting conceptual considerations: the first by Lindhard, a South African psychologist doctoral candidate at the International University of Professional Studies,

in Hawaii, analyzing some conceptual contradictions between the terms Security and Defence; and a second by two law scholars, Cayón, from Spain, and the Dominican García Segura, who propose some insights with a doctrinal contribution to a just cyberwar-related to PIC.

In the second section, Ramirez, a Spanish scholar expert on conflict and aggression, and Harries, a former FC Canadian officer dedicates their chapters directly to the importance of a joint cooperation of civil and military societies in security matters.

The three chapters in the third section discuss directly the critical infrastructures: Davara, a general of the Spanish army and former head of the European Union Satellites Centre, uses his extensive knowledge on the topic to provide the reader with a sound explanation, based on risk management and governance, that embraces both protection and cyber security and resilience solutions; Finaud, a French diplomat, looks specifically at how to deal with the cost of PIC; and Boulos, a Palestinian jurist and her colleague Biosca Azcoiti focus their work on what may be the main critical infrastructure to be protected: the populations exposed to terrorism threats.

The last section of this book addresses the topic relating it to some specific psychological aspects: Farnicka, a Polish sociopsychologist, assesses marginalization and exclusion as threats to security and defence; two Spanish psychologists, Fernández Rodríguez and Miralles, give some further insight into the suicide terrorism, with a special focus on the role of Jihadist women, through a broad psychological analysis; and finally two Italian researchers, Pelucchi and Sillari, suggest how the structure of our mental machinery influences and constricts intelligence analysis.

Many scientific societies have been actively studying security for decades, but unfortunately, they often study it unaware of other disciplines' work. We hope that this book will show the value of purposefully crossing disciplinary boundaries.

—J. Martin Ramírez
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PART I:

CONCEPTUAL CONSIDERATIONS

CHAPTER ONE

SECURITY AND DEFENSE: A CONTRADICTION IN TERMS?[1] [2]

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Outline

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Abstract

Man has always faced danger. So do animals in the wild. However, the pattern of how they deal with danger is very different. Modern day man possesses a huge arsenal of many varied weapons. However, has this brought the security man is looking for? Based on scientific data, we question the validity of the belief that security is linked to defense. We also consider some different definitions of *security* as well as suggesting ways of finding it through therapy and meditation. Derived from string theory, the *Theory of Different Dimensions* is contemplated to see how it might lead to a deeper understanding of how people perceive the world. To supplement this, the theory of projection as used by depth psychologists, traditional societies, and quantum physics, is also considered. If the attributes we see in others are just projections of our unacknowledged qualities and emotions as suggested by these different traditions, then the search for security based on the proliferation of arms is also a mirage and a contradiction in terms. Security then can only be attained through embarking on an inner journey to find out who we really are. This includes expanding our perception, working with our shadow, facing our inner fears and anxieties and learning to use the verb *to be* in a more conscious way.

Keywords: security, defense, perception, projection, inner journey

1. Introduction

The history of man on this planet seems to revolve around an endless series of wars with intervals of peace or an absence of war in between. In recent years, due to technology, the weapons used by modern societies have spiraled to include weapons that can, in fact, destroy mankind and all

of life on this planet. The reason for their development seems to rest on the understanding that security can be obtained by a defense that involves the possession of arms. The corollary of this statement leads almost naturally to the belief that an increase in defense brings an increase in security. However, before we accept this, we need to find out if the first proposition is true. We should also ask if this is the type of security we really need or want.

In this presentation we will look at defense and security from various angles, including scientific findings, to see what validity there is in the assertions that link security with a defense that implicates the possession of arms. We will also look at what we mean by *security*; the underlying cause or causes of the need for security and how we can work to achieve a security that is not based on defense or on the creation, storage or use of arms. Based on different theories, we will also look at how reality is perceived. Different solutions generated by these theories will also be considered.

2. Defense

In recent history that does not yet date a hundred years, the build-up of nuclear arms between America and Russia began after the 2nd World War. Both sides distrusted each other. It was initially believed that uranium was a rare commodity and America, fearing nuclear proliferation, thought that buying up the stocks of uranium would give them the safety and security they were seeking (Helmreich 1986). However, this was not to be, for within a decade large deposits of uranium were discovered. Nuclear proliferation could not be avoided in this way.

> (During the Cold War) vast quantities of uranium were amassed, and tens of thousands of thousands of nuclear weapons were built using enriched uranium and plutonium made from uranium. (*New World Encyclopedia,* paragraph 7)

After the end of the Cold War, it was decided to reduce the number of weapons. However, it has been found that the cost of their destruction is enormous.

> The radioactive waste created in the manufacture of an average nuclear bomb includes 2,000 tons of uranium mining waste, 4 tons of depleted uranium and 50 cubic meters of 'low-level' waste. 'Clean up' following nuclear weapon production and testing in the US will cost more than $300

> billion through to the year 2070. (*New Internationalist Magazine*, 2008, paragraph 4)

Equally, the cost of protecting the storage of them so that they do not fall into wrong hands is also great. From 1993 to 2007 America spent about 1.6 billion US dollars on protecting Russian stockpiles of nuclear armaments (National Nuclear Security Administration, 2007). It is also estimated that "the United States will have to spend $18 billion a year for 15 years starting in 2021 to keep its nuclear weapons operational" (Osborne in Gady 2015*)* As uranium is a substance that is cancer provoking (Gilland, Hunt, Pardilla & Key 2000), its usage and storage cannot be taken lightly. Fallout of daughter isotopes from nuclear tests done by America, Russia and later France has also created pollution throughout the world (Warneke, Warwick & Taylor 2002). There have been at least 2,053 nuclear test explosions in the atmosphere, underwater and underground. According to Barnaby (2004),

> the combined explosive yield of these bombs is equivalent to 40,000 Hiroshima bombs and has resulted in 50 times more radioactive contamination than the 1986 Chernobyl nuclear accident. (Barnaby in *New Internationalist Magazine* 2008, paragraph 3)

Human exposure to uranium or its radioactive daughters can be through inhaling, or drinking contaminated water or food. Of course, animals are exposed in the same way. Even though the levels of uranium are said to be small, neither the testing of nuclear armaments nor the exposure to uranium can be considered safe. In fact, Barnaby (2004) estimates that exposure to the radioactivity produced by atmospheric tests will eventually cause the death of about 1.5 million people. On 10th September 1996, the United Nations adopted *The Comprehensive Nuclear-Test-Ban Treaty* (CTBT), a multilateral treaty by which states agree to ban all nuclear explosions in all environments for military or civilian purposes (UN 1996). The treaty has not yet entered into force, as it has not yet been ratified by eight states.

Another question we must ask ourselves is why were so many warheads created during the Cold War when only one nuclear bomb is needed to wipe out a whole city? The answer to this question seems to be based on the unacknowledged corollary mentioned above which involves the belief that an increase in defense brings an increase in security. However, if the first proposition is false, then the corollary on which it is based is also false. Can we also honestly say that the build-up of armaments is a true sign of intelligence or is there something else

operating within us that we have to uncover and learn to work with? However, first let us turn now to look at small arms, for weapons of mass destruction (WMDs) are not the only weapons that are dangerous.

Small arms and light weapons, in fact, cause more harm and death than WMDs. According to a survey concerning small arms:

> between 2004 and 2009, at least 208,300 violent deaths were recorded in armed conflicts—an average of 52,000 people killed per year. This is a conservative estimate including only recorded deaths: the real total may be much higher. (*Small Arms Survey* n.d., paragraph 1)

We should therefore also ask if possessing small arms leads to greater security. Former UN Secretary Kofi Annan said that small arms and light weapons "could be described as weapons of mass destruction" (Annan, in *Small Arms Review Conference* 2006) because they cause so much damage. In addition to the figure mentioned above,

> the number of indirect deaths from armed violence is thought to be four times as high. These deaths are mainly due to lack of access to medical care, food, and water. The number of small arms and light weapons in circulation is estimated at 875 million, with an additional 700,000 to 900,000 being produced each year. Nearly three quarters are in the possession of civilians. (Development and Cooperation 2013, paragraph 4)

In a study done in 1998, the number of children of 15 years and under dying accidentally in America after finding a parent's gun was over 150 (Lott & Whitley 2001). The same authors also concluded that accidental injuries were most common in homes where guns were kept for self-defense. Further research suggests that access to firearms in the home increases the risk of violent death, which comprises of the "risk for completed suicide and being the victim of homicide" (Anglemyer, Horvath & Rutherford 2014). This seems like a contradiction in terms for the very people who are seeking security through possessing a gun, sometimes land up being injured or killed by it. In a recent Pugwash meeting in Nagasaki, Ramirez and Cayón (2015) pleaded that non-proliferation should not only apply to WMDs but also to conventional armaments.

3. Does Possessing Arms Increase Security?

But are these figures the whole story and will banning both WMDs and conventional weapons eventually bring us the security we desire? Of course, working towards treaties that outlaw the manufacture, storage and

use of weapons of all sorts is a noble way forward, but again we refer to a question we asked earlier, what is really going on? First man has created weapons believing they would make him more secure, and now he wants to outlaw the very same weapons so he can feel more secure. This apparent paradox needs to be explored more fully to understand the underlying causes of the ideas that link security with defense. Therefore, let us now look at what we mean by security.

4. Security

According to the *Merriam-Webster Dictionary*, the word security has several meanings with various connotations. The first definition is "the state of being protected or safe from harm" and things are done to "make people or places safe" and "freedom from danger". However, the second definition talks of security as a quality or state of being secure which involves "freedom from fear or anxiety".

4.1. Security as Meaning Safe

The first definition seems to indicate that something can be done from outside to protect us from danger and harm. Moreover, this is probably the sense that is being referred to when we talk about "security and defense". It also leads us to the understanding that the possession of weapons can possibly defend man and his family or country against harm. However, based on reflection and scientific research, this understanding is proving to be erroneous. It is an unproven belief or hypothesis. As we mentioned above, access to firearms in a home increases the risk of violent death. Equally the creation, storage and use of WMDs increase the risk of cancers due to exposure to uranium and the daughter isotopes, and the fear of weapons falling into the wrong hands and/or being used (regardless of by whom) to seriously endanger life on this planet. It is no wonder that that more reflective people are seriously considering a treaty to ban both WMDs and small arms. This is probably a sign that mankind is reaching a certain maturity in his contemplations and thinking. It is also only in recent years that the belief that security through defense which involves the possession of arms and weapons, has begun to be examined scientifically. The scientific findings mentioned above all seem to call into doubt that security can be found in the possession and storage of arms. However, of course, this depends on how we define security. So let us now look a little closer at the other definition of security we mentioned above.

4.2. Security as a Way of Being

The other definition of security involves the state of being secure which comprises of "freedom from fear or anxiety". Once we talk of a "state of being", we are talking about an inner conscious experience. So we also have to ask ourselves if creating, storing and using weapons have led people to experience more security inside, a state which is essentially free from fear or anxiety? Also, do our "so-called enemies" just go away when we conquer them through the use of force? In addition, we must also ask ourselves if the banning of WMDs and small arms will change our inner conscious experience. Certainly it might lower the tension, but it is argued here that having treaties, noble as they might be, will not be enough. A certain fear might arise that not everybody will adhere to the treaty, and then we might be back on the merry-go-round once again. For this author, the only way to experience freedom from fear or anxiety is to work internally with one´s inner conscious states. If this is so, the next question is what do we need to do to be able to achieve an inner state that is free from fear and anxiety or how can we work with these states?

5. Therapy and Meditation

There are several ways we can approach this, which in the end, may be compatible and complementary. The first approach we will consider is a therapeutic approach for it helps us understand the nature of stress and trauma and how it affects us. It also provides us with a solution, which is body based and related to the system's natural healing ability (Payne, Levine & Crane-Godreau 2015).

5.1. Somatic Experiencing

For Levine (1989) there is an obvious difference between the bright, alert state of animals in the wild and modern man who often seems hardly aware of his surroundings or what is happening inside of himself. He, therefore, asked himself: what do animals in the wild still do that man has forgotten how to do?

Animals in the wild constantly live in danger of becoming the prey of other animals. Even a male lion is eventually defeated when a younger male lion takes over his pride. However, as animals seem to deal with these events in a very different way to humans, Levine and Frederick (1997) decided to investigate what they do. Through careful observation, they found that when faced with a life threatening situation, animals could

do two things, fight or flight. Of course, this observation is not new; Cannon first described it in the 1920s. However, in observing an antelope flee from a lion, Levine became aware that there often comes a time when the antelope just drops. And of course, this is when the lion can "catch" it. However, if the lion is then frightened off, what happens to the buck that is now lying on the ground? If one watches carefully the buck will lie still for a long time; then it will either start to tremble and/or shake with abrupt movements resembling those seen in somebody undergoing an epileptic fit. Finally, it will perform an exuberant leap that has been called the victory leap, and off it will run—it has survived death once again! A bird having hit itself against a glass window will go through much the same process. Levine and Frederick therefore asked themselves what was happening inside. They surmised that when the buck dropped it dissociated as in nature, carnivores like eating their prey alive. It seems Nature has allowed another state where the spirit or life force of the animal essentially leaves the body so that it does not feel the pain of its body being eaten alive. It is not dead at this stage, but it is not present in its body either. In order to return, they postulated that the activities described above occur to literally shake the experience out of the Central Nervous System (CNS). Moreover, it is this shaking and trembling process that permits the CNS of the animal to readjust after the traumatic event and enable it to run off ready to face life again (Levine & Frederick 1997).

Mankind too has always faced danger. However, the danger we face today is not the same that man faced when he lived in the wild. Today we might get a phone call informing us that we have lost all of our money on the stock exchange. It is of course perceived as a dangerous situation which we neither flee from nor fight, even though our body has begun to produce hormones preparing us to perform these actions. In the end, all we do is become numb and overwhelmed by an event that is out of our control.

Of course all mankind including children, still face events that are truly life threatening where maybe they are too young to flee or fight. These experiences, therefore, become part of their life stories, which are often accompanied by traumatic symptoms of hyper arousal, shutdown, and deregulation. This is an unresolved story, for generally when the CNS tries to discharge the event, out of ignorance modern man tries to stop the process, especially when trembling, shaking and discharges occur.

Levine (1999) postulates that the very same survival based brain system involved in the formation of trauma can be enlisted in the transformation and healing of the trauma. In therapeutic terms, this "instinct to heal" and self-regulate is activated through the awareness of

empowering body sensations that contradict those of paralysis and helplessness. Levine termed his therapeutic approach *somatic experiencing,* and it is the new experience that in the end gives rise to a new way of being which restores resilience, equilibrium, and wholeness. Essentially it is a therapy where interoception and proprioception are the core elements that are involved and also said to lead to a successful outcome (Payne, Levine & Crane-Godreau 2015). The term *interoception* involves "sensitivity to stimuli originating inside the body" and involves three different aspects: "sensitivity", "proprioception" and "somatic sense" (The Free Dictionary, interoception).

From this analysis of trauma, it is easy to understand that people who live or have lived in war zones are living under highly traumatic conditions which no doubt have an impact on their CNS and their inner experiencing consciousness. Later in this presentation, we will return to consider in more depth the impact of war on the survivors of war.

5.2. Meditation Methods that Meditate on the Self via the Heart

Not much research has yet been undertaken on meditation methods that are feeling based and include meditating on the deeper Self (Louchakova 2003; Louchakova 2007). Payne, Levine & Crane-Godreau (2015) claim that many meditation methods that focus on internal awareness share a similarity to the *Somatic Experiencing* method described above. They also feel that traditional methods of meditative movement such as *Yoga*, *Tái Chi,* and *Quigong* share this same focus (Schmalzl et al., in Payne, Levine & Crane-Godreau 2015, 1). It has yet to be established whether Somatic Experiencing produces the same outcomes in the long run as meditation methods that not only include interoception and proprioception but also mediate on the deeper Self via the heart and include the contemplation of the phenomenological inner experiencing consciousness of the practitioner. In methods that meditate on the Self via the heart, the somatic sense, which is an awareness of an inner organ, namely the heart, is included in a very distinct way. The author of this paper is at present undertaking a study into one of these methods, which is known as *Arka Dhyana* or Intuitive Meditation (IM). In IM, practitioners learn to direct their minds where they want them to go. This is done using their own touch, coupled with the breath and a vibratory sound, which also increase sensitivity to stimuli originating inside the body. In other words, it increases interoception in a very unique and natural way (Lindhard, in press). Like most meditation methods one of the first layers opened is the emotional layer and in IM, the sensations behind what we identify as an

emotion, are experienced consciously without classifying them as good or bad. They are also experienced by our seeing them as part of us rather than identifying with them through the use of the verb to be. This includes fear and anxiety. So instead of saying: "I am afraid," which implicates the full identification of the subject with the emotion, IM practitioners learn that fear is only a part of them, and they are much more than just *fear*. They can then go on to explore where they store it in their body. In this way, the different emotions come to be considered as natural expressions of the body under certain circumstances. Moreover, when practitioners become more advanced, they become aware of how their own inner thoughts and stories provoke inner reactions in their bodies which are instantly experienced. When this is realized, they become very careful how they use words and what stories they tell themselves for these are instantly followed by a bodily reaction that can be pleasant or unpleasant. It seems the body reacts to outside reality and to the stories we tell ourselves in inherently the same way (Lindhard 2015).

However, regardless of the differences that might be eventually found, all the methods mentioned previously have something in common, especially in the initial stages. Also, it must be remembered that therapy methods usually address a specific problem like trauma whereas some meditation methods like IM are used to lead the practitioner to the experience of the most sublime states of consciousness including enlightenment (Arka 2013). Basically, each person will go as far as he wants to go, and some just want to feel more relaxed. However, in IM, some practitioners also want to experience the true nature of Consciousness, which in the East, is considered as *Sat, Chit,* and *Ananda––*pure being, pure knowledge and pure bliss (Lindhard 2013, MA Integration Paper).

Meditation methods have been mentioned here to show that man is not doomed to only experience inner conscious states that are fear based, but many different inner experiencing states of consciousness are available to the intrepid explorer of his inner world, including states known as *ananda* or bliss. When the inner sensations that we label as fear and sensations that we label as anxiety, are finally consciously explored and thus brought into the "light" or conscious awareness, practitioners, as we have already mentioned above, can then go on to discover how their own thoughts and words produce specific experiences inside. With this realization, they then can take control of how they use words and what stories they expose themselves to, including what they tell themselves and what they reveal themselves to outside, such as violent films. This is real security for they

now are consciously the "captain of their ship" and can to a certain extent decide what they want to experience.

When a real disaster occurs outside, a seasoned meditator is also able to seek instantly-intuitive guidance on how to work with the situation. In Africa, this author has seen an experienced tracker who is intimately connected to nature, stop a charging elephant in its tracks by just holding up his right hand. To seek security through the build-up of weapons certainly seems to be a contradiction in terms when one considers what mankind is inherently capable of achieving when he or she turns their attention inwards and begins to meditate on the deeper Self. The inner journey is truly an adventurous inner exploration to find out *who we really are* and the true nature of consciousness. This also requires that we become aware of how we operate and how our bodies react to the stories we tell ourselves. So let us now consider several theories about how our perception operates.

6. Different Dimensions of Reality

Let us now turn our attention to the theory of different dimensions of reality, as these too not only seem to affect our inner conscious experiences but also how we perceive the world outside. Williams (2014) explains how

> 'dimensions' are simply the different facets of what we perceive to be reality'... (According to) the theoretical framework of Superstring Theory...the universe exists in ten or more different dimensions. These different aspects are what govern the universe, the fundamental forces of nature, and all the elementary particles contained within. (Paragraphs 2 & 3)

On a daily basis, we are aware of a world that has three dimensions: length, width, and depth. A good example of this is a cube or a human body. We are also aware of the first dimension, which is essentially a straight line with no other discernible qualities and the second dimension, which has *x* and *y* axes. This creates a shape like a square or a rectangle. Beyond these dimensions, scientists speculate there are seven more dimensions which "are not immediately apparent to us, but which can still be perceived as having a direct effect on the universe and reality as we know it" (paragraph 5). Williams points out that the fourth dimension is thought by scientists to be related with time, and the fifth and sixth are where the notion of possible worlds arise "In theory, if you could master